ASSIGNMENT 3

Textbook Assignment: "Utility Systems," chapter 3, page 3-1 through 3-10 and "Air-Conditioning Systems," chapter 4, pages 4-1 through 4-19.

3-1. Which of the following systems is used to prevent ice from forming on an aircraft?

1. Anti-ice
2. Deice
3. Rain-removal
4. Defrost

3-2. The P-3 aircraft uses what source of heat for its deicing system?

1. Electrical energy
2. Bleed air
3. Hydraulic pumps
4. Solar energy

3-3. What total number of bleed-air shutoff valves are on the P-3 aircraft?

1. Five
2. Six
3. Three
4. Four

3-4. By what method are the deicing system modulating valves controlled?

1. Pneumatic
2. Hydraulic
3. Electric
4. Thermostatic

3-5 . What component causes the modulating valve to close when the pressure is reduced on the modulating valve diaphragm?

1. Spring
2. Solenoid
3. Sensor
4. Spoon

3-6. Which of the following conditions will cause high temperature within the leading edge of the wing?

1. Solar radiation
2. Bleed-air leakage
3. Malfunctioning modulating valve
4. Both 2 and 3 above

3-7. The fusalage bleed-air shutoff valves are normally open during deicing operations.

1. True
2. False

3-8. To perform a deicing leak test, the manifold pressure must reach what minimum psi reading?

1. 40
2. 55
3. 70
4. 85

3-9. What should be the maximum number of seconds required for the accept light to Illuminate during a leak test?

1. 8
2. 12
3. 15
4. 20

3-10. The P-3C wing deice system uses bleed-air from what stage(s) of the engine compressor?

1. 12th
2. 13th
3. 14th
4. Both 2 and 3 above

3-11. Where is the wing leading edge pneumatic thermostat located?

1. Wing leading edge tips
2. Adjacent to each modulating valve
3. Adjacent to shut-off valve
4. Wing leading edge ducting

3-12. What component allows pressure from the modulating valve diaphragm to vent?

1. Leading edge temperature and overheat circuit
2. Overheat thermal switch
3. Fuselage bleed-air shutoff valve
4. Wing leading edge thermostat

3-13. At what temperature will the leading edge caution hot light illuminate?

1. 210°F
2. 220°F
3. 230°F
4. 240°F

3-14. The ducting overheat switches are explosiveproof, thermally actuated electrical switches with an integral temperature sensing element.

1. True
2. False

3-15. At what temperature will the outboard leading edge overheat warning switch open?

1. 205°F
2. 210°F
3. 215°F
4. 220°F

3-16. Where is the rotary selector switch located?

1. Bleed-air coated panel
2. Leading edge caution panel
3. Ice control panel box
4. Ice control protection panel

3-17. What total number of duct overheat thermal switches are installed in the P-3C aircraft?

1. Three
2. Six
3. Nine
4. Twelve

3-18. What will cause the OPEN light on the ice control protection panel to illuminate?

1. Failure of system components
2. When the air-conditioning valve is open
3. When the bleed-air valve opens more than 2 degrees
4. When the modulating valve opens more than 2 degrees

3-19. Either one or both fuselage bleed-air shutoff valves must be open to direct air to the wing anti-icing ducting?

1. True
2. False

3-20. How many modulating valve control switches are located on the left side of the wing and empennage ice panel?

1. One
2. Two
3. Three
4. Four

3-21. What switch(s) on the wing and empennage ice panel controls the outboard modulating valve on the left and right wings?

1. Inboard
2. Outboard
3. Center
4. Both 1 and 2 above

3-22. What switches will open when an overheat is sensed at 175°F and closes at 190°F?

1. Leading edge overheat warning switches
2. Wing overheat warning switches only
3. Fuselage overheat warning switches only
4. Wing and fuselage overheat warning switches

3-23. During normal operation of the de-icing system, two of the four engine bleed-air valves are open to supply bleed-air to the cross-ship manifold?

1. True
2. False

3-24. When should the deicing manifold system be tested for leakage?

1. Before each flight
2. Before each engine turn
3. During each flight
4. Both two and three above

3-25. The involvement of the AME 1 and AMEC in the maintenance of the deicing system normally consists of supervision only.

1. True
2. False

3-26. The A-6 rain-removal system uses bleed-air from what stage of the engine compressor?

1. 12th
2. 13th
3. 14th
4. 15th

3-27. Upon loss of electrical power, the nosewheel well bleed-air shutoff valve will be in what position?

1. Open
2. Closed
3. In the last selected position
4. In the manual position

3-28. What type of power is used to operate the rain-removal pressure-regulator shutoff valve?

1. Hydraulic
2. Pneumatic
3. Electric
4. Manual

3-29. What shutoff valve controls the airflow from the rain-removal system to the windshield?

1. Nosewheel well bleed air
2. Rain-removal pressure regulator
3. Main-engine bleed air
4. Cabin bleed air

3-30. What total number of nozzles are on the A-6 windshield?

1. 22
2. 24
3. 26
4. 28

3-31. What rain-removal system component mixes cool air with hot bleed air?

1. Ejector
2. Plenum
3. Nozzle
4. Coupler

3-32. In what two positions may the nosewheel well bleed-air switch be placed?

1. ON and OFF
2. AUTO and ON
3. AUTO and OFF
4. MANUAL and OFF

3-33. When the windshield switch is placed in the AIR position, through what circuit breaker does the dc voltage flow?

1. Anti-ice
2. Air conditioning
3. Rain-removal
4. Windshield air

3-34. The windshield air caution light illuminates to indicate that the windshield switch is in what position?

1. ON
2. OFF
3. AUTO
4. AIR

3-35. Where is the nosewheel well bleed-air relay mounted for the rain-removal system?

1. Air-conditioning panel
2. Aft bay relay box no. 3
3. Left main landing gear
4. Cockpit center console

3-36. The windshield rain-removal warning relay is a single throw, double pole sealed relay?

1. True
2. False

3-37. What are the three positions of the windshield switch?

1. ON, OFF, AUTO
2. AUTO, MANUAL, OFF
3. AIR, WASH, AUTO
4. WASH, AIR, OFF

3-38. Where is the rain-removal nozzle assembly located?

1. Beneath the pilot's windshield
2. Beneath the b/n's windshield
3. Both 1 and 2 above
4. Inside and under the radome next to the windshield

3-39. What switch controls the rain-removal pressure-regulator shutoff valve?

1. Windshield wash
2. Rain removal
3. Windshield
4. Air conditioning

3-40. The rain-removal system removes rain by directing a flow of heated air across the windscreen. What is the function of this heated air?

1. It blows the water away
2. It drys the windscreen, keeps it dry
3. It breaks the raindrops into small particles
4. It evaporates the raindrops

3-41. The left main landing gear weight-on-wheels switch controls the nosewheel and bleed-air relay?

1. True
2. False

3-42. Under what condition(s) is the left main landing gear weight-on-wheels switch in the closed position?

1. When the strut is compressed
2. When the strut is extended
3. Neither of the above

3-43. What stage of the compressor is the primary source of bleed air for operation of the ECS?

1. 10th
2. 12th
3. 14th
4. 16th

3-44. Which of the following methods is used to (a) control and (b) actuate the bleed-air flow control and shutoff valve?

1. (a) Electric (b) pneumatic
2. (a) Electric (b) electric
3. (a) Pneumatic (b) electric
4. (a) Pneumatic (b) pneumatic

3-45. What air supply source(s) could be used for engine starting and ground operation of the air-conditioning system?

1. Ram air
2. Ground start air
3. APU air
4. Both 2 and 3 above

3-46. Which of the following conditions will cause the bleed-air shutoff valve to close?

1. Overtemperature
2. Overpressure
3. Loss of electrical power
4. All of the above

3-47. When operating the deicing system with one engine secured, what valve must be open to allow bleed air to both sides of the aircraft?

1. Bleed-air shutoff
2. Bleed-air flow control and shutoff
3. Engine bleed-air bypass and shutoff
4. Crossover duct isolation check

3-48. What valve will open because of a sensed pressure drop through the ice screen?

1. Bleed-air shutoff
2. Bleed-air flow control and shutoff
3. Engine bleed-air bypass and shutoff
4. Nonice and low-limit control

3-49. What do the lights for the bleed-air shutoff valves indicate?

1. Switch position
2. Valve position
3. Both 1 and 2 above
4. High temperature

3-50. In the event of a rupture in the left or right manifold, what valve will prevent overbleeding of the engines?

1. Bleed-air shutoff
2. 10th-stage check
3. High-stage check
4. Crossover duct isolation check

3-51. What is the total number of basic components in the refrigeration subsystem?

1. 7
2. 8
3. 9
4. 10

3-52. What component, if any, is used to check the oil level in the cooling turbine?

1. Dip stick
2. Pressure gauge
3. Siqht gauge
4. None

3-53. Which of the following conditions will cause the temperature indicator probe in the fan inlet to trip?

1. Obstruction of the ram-air inlet duct
2. Collapse of the ram-air inlet duct
3. Temperature above 440°F
4. All of the above

3-54. What component allows air to pass through the water separator if ice has accumulated in the coalescer bag?

1. Water separator ice screen
2. Coalescer cone
3. Swirl vanes
4. Water separate bypass valve

3-54. What name is given to the air used to cool the sonobuoy and weapons bays?

1. Refrigerated
2. Partially cooled
3. Cabin exhaust
4. Ram

3-56. What component prevents ram air from flooding the cabin when the aircraft is flying at high speeds?

1. Outflow valve
2. Cabin pressure regulator
3. Cabin air temperature control
4. Ram-air shutoff valve

3-57. When the air-conditioning switch is OFF, the AUX vent switch is ON, and the ram-air pressure does not meet cabin exhaust fan requirements, what valve will open?

1. Ram-air shutoff
2. Water separator bypass
3. Cabin outflow
4. Negative pressure relief

3-58. The torque motor in the cabin temperature control modulating valve converts electrical signals to what type signals?

1. Pneumatic
2. Mechanical
3. Magnetic
4. Hydraulic

3-59. What component provides the controlling signal for the cabin temperature control valve?

1. Cabin air thermistors
2. Cabin air sensor
3. Cabin air temperature control
4. Cabin air high-temperature thermostat

3-60. The opening of the cabin air high-temperature limit thermostat internal valve causes what valve(s) to close?

1. Cabin temperature control valve
2. Nonice and low-limit control valve
3. Both 1 and 2 above
4. Bleed-air flow control and shutoff valve

3-61. The cabin temperature control sensor is designed to control the cabin temperature within what number of degrees of the selected temperature?

1. ±3
2. ±7
3. ±10
4. ±11

3-62. In the ram-air augmentation mode, the ram-air shutoff valve regulates downstream pressure to what fixed differential above cabin pressure?

1. 7.5±2
2. 5.5±1
3. 3.0±.5
4. 4.0±1

3-63. During manual operation, what switch is used to position the ram-air shutoff valve?

1. Cabin pressurization
2. Air-conditioning
3. Auxiliary vent
4. Temperature select

3-64. When the air conditioning automatically shuts down and the ram-air shutoff valve is fully open, what action, if any, must be taken to restore normal operation?

1. Secure the AUX VENT switch
2. Turn the air-conditioning switch to OFF and then to ON
3. Turn the air-conditioning switch to OFF, then to RESET, and then to ON
4. None

3-65. What valve is controlled by the aux vent switch?

1. Cabin temperature modulating valve
2. Ram-air valve
3. Aux-vent valve
4. Cabin-outflow valve

3-66. What is the function of the environmental control panel?

1. To control temperature
2. To control pressurization
3. To control anti-icing function
4. All the above

3-67. The ground-aircheck valve is a split-flapper valve which is spring-loaded to the open position until engine start-up.

1. True
2. False

3-68. What component(s) interconnect with the ram-air high and low-temperature limit switch circuitry?

1. Auxiliary vent switch
2. Bleed-air flow control valve and ram-air shutoff switch
3. Both 1 and 2 above
4. Aux bent valve and aux vent switch

3-69. With the cabin air temperature selector in the automatic mode within what temperature range can the cabin temperature be selected?

1. 70°F to 90°F
2. 60°F to 80°F
3. 65°F to 85°F
4. 75°F to 95°F

3-70. What is the temperature limit on the cabin temperature control valve while in the automatic mode?

1. 160°±5°F
2. 160°±15°F
3. 185°±5°F
4. 185°±15°F

3-71. Icing of the water separator will only occur at low altitudes where mass airflow and temperature are relatively high.

1. True
2. False

3-72. What component in the refrigeration pack low-limit control senses duct air temperature and compares it with an internally generated reference?

1. Pneumatic pickups
2. Inlet air sensor
3. Thermistor
4. Temperature limit thermostat

3-73. What are the two physically separated packages of the refrigeration subsystem?

1. Refrigeration and air conditioning
2. Heating and air conditioning
3. Refrigeration and cabin air/water separator
4. Air conditioning and pressurization

3-74. Water vapor condenses as ice crystals when the turbine discharge air drops below what maximum temperature

1. 0°F
2. 15°F
3. 32°F
4. 40°F

3-75. In the bleed-air system, what component senses the bleed-air pressure in the duct upstream from the bleed-air flow control and shutoff valve?

1. Overtemperature pressure sensor
2. Temperature control orifice
3. Temperature sensor
4. Pressure transmitter